CHAPTER 4
HEALTHY CHILDREN

> Goal: To improve child health, foster optimal childhood development, and, by 1990, reduce deaths among children ages one to 14 years by at least 20 percent, to fewer than 34 per 100,000.

The health of American children is better than ever before. The childhood mortality rate now is far below what it was in 1900 when 870 of every 100,000 children ages one to 14 years died annually (Figure 4-A). Then, the principal causes of death were infectious diseases--and, although they still are responsible for some illness and death, their threat has been greatly reduced through improved sanitation, nutrition and housing, as well as use of vaccines and antibiotics.

By 1925, the death rate for children had fallen to 330 per 100,000; by 1950, to 90; and by 1977, to 43.

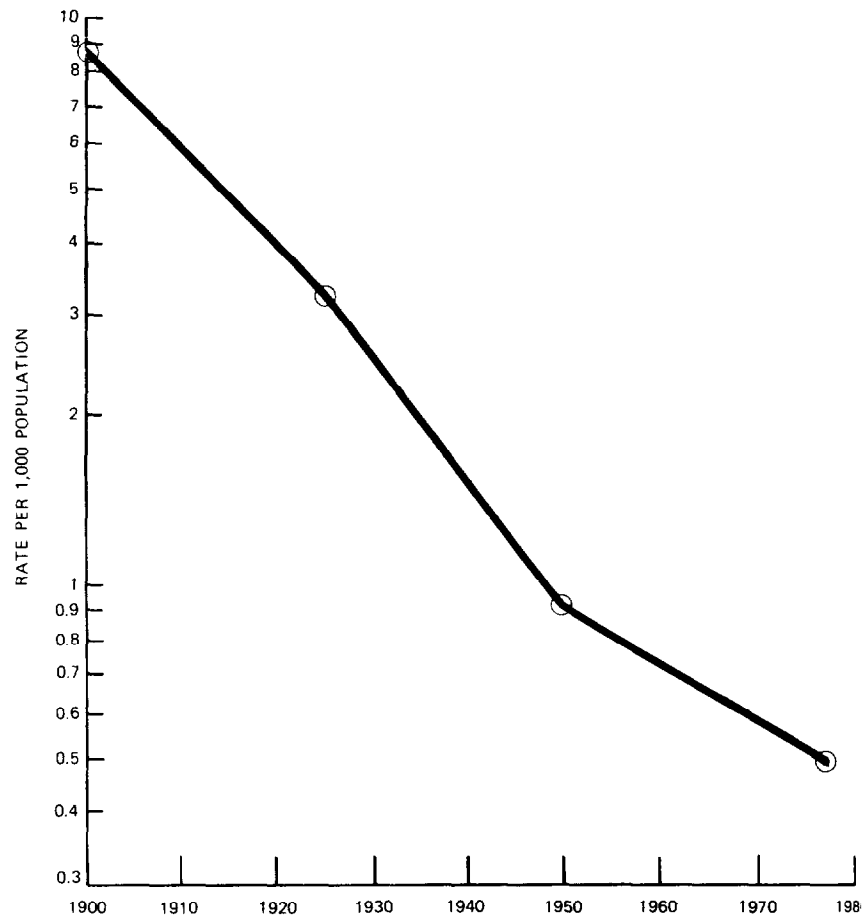
Yet, there is cause for concern.

- Black American children have a 30 percent higher mortality rate.
- For all our children at ages one to 14 the death rate is still slightly higher than for those in some other countries (Figure 4-B).
- And our rate of mortality decline has slowed in recent years.

All preventable deaths and injuries are tragic--those for children, especially so.

FIGURE 4-A

DEATH RATES FOR AGES 1-14 YEARS: UNITED STATES, SELECTED YEARS 1900-1977

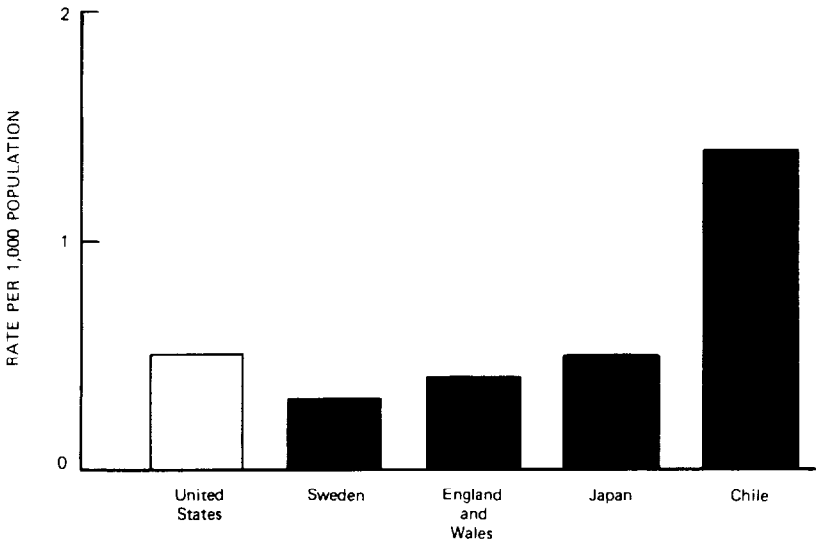


NOTE: 1977 data are provisional; data for all other years are final. Selected years are 1900, 1925, 1950, 1977.

Source: National Center for Health Statistics, Division of Vital Statistics.

FIGURE 4-B

DEATH RATES FOR AGES 1-14 YEARS: SELECTED COUNTRIES, 1975



NOTE: The most recent year of data for Chile is 1971.

Sources: United States, National Center for Health Statistics, Division of Vital Statistics; other countries, United Nations.

Cancer, birth defects, and influenza and pneumonia cause childhood deaths--all at relatively low rates (Figure 4-C).

No other preventable cause poses such a major threat as accidents which account for 45 percent of total childhood mortality.

By itself, a 50 percent reduction in fatal accidents would be enough to achieve the goal of fewer than 34 deaths per 100,000 by 1990. And this is not an unrealistic target, since a number of actions can be taken. It is a fact, for instance, that mandatory seat belt laws scrupulously implemented in some countries have reduced traffic accident deaths by 30 percent. It should also be entirely feasible to reduce deaths due to fires, falls, and other common childhood accidents.

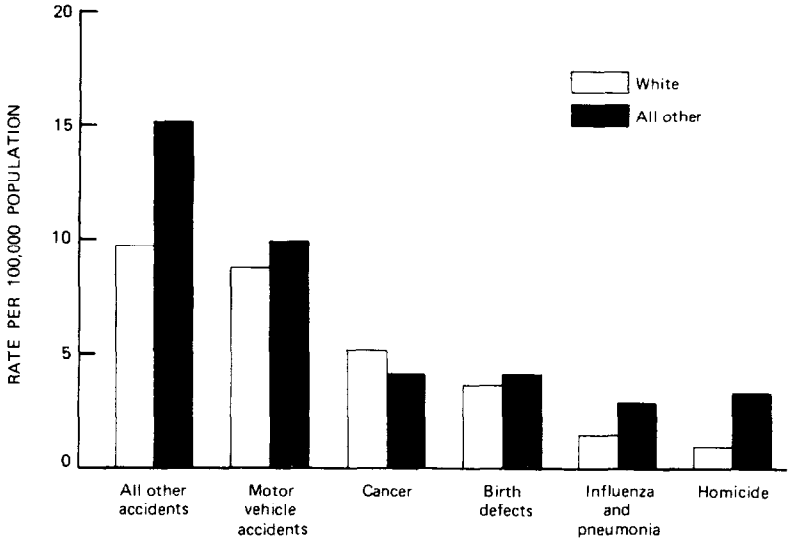
In addition to disease and injury, children face other problems--of behavioral, emotional and intellectual development. They include learning difficulties, school troubles, behavioral disturbances, and speech and vision problems. A generation ago, such problems did not seem as prominent as they do today and they are now sometimes called the "new morbidity."

We must face the fact, too, that characteristics developed during childhood can lead to adult disease and disability--and as many as 40 percent of our youngsters aged 11 to 14, for example, are now estimated to have, already present, one or more of the risk factors associated with heart disease: overweight, high blood pressure, high blood cholesterol, cigarette smoking, lack of exercise, or diabetes.

Because they are of such importance for well-being all through life, this chapter begins with a special focus on childhood growth and development issues. There follows an analysis of childhood accidental injuries and two other significant, yet preventable, problems.

FIGURE 4-C

MAJOR CAUSES OF DEATH FOR AGES 1-14 YEARS: UNITED STATES, 1976



Source: Based on data from the National Center for Health Statistics, Division of Vital Statistics.

Subgoal: Enhancing Childhood Growth and Development

Perhaps the most critical characteristic of childhood is rapid, dramatic change--physical, emotional, and behavorial.

During the early years of development, a child is especially vulnerable not only to infection and injury but also to problems stemming from social or interpersonal causes.

If special risks--such as poor nutrition, child abuse or neglect, and insufficient stimulus to intellectual and psychological development--are not identified and dealt with early, growth may be profoundly affected. And the consequences of physical and psychological illness early in life, even if not apparent then, may become so later.

Is there in fact a "new morbidity?" Actually, learning disorders, inadequate school functioning, behavioral problems, and speech and vision difficulties are not new. Rather, successful control of many life-threatening childhood diseases of the past has permitted a new awareness of and sensitivity to these problems.

We have come to realize that threats to a child's physical growth and development also threaten optimal mental growth and development--and that, too, a stimulating and safe environment is essential to optimum mental growth and development.

Important sociologic trends need to be taken into account. In 1977, 18 percent of all children--up from 12 percent in 1970--were living in families headed by single parents. And almost 50 percent of all children today have mothers who work.

As a result, early childhood development programs, such as Head Start, which include an array of health, educational, nutritional, and social services are increasingly needed.

Several recent studies have shown that children, especially those from low-income families, derive many positive benefits from preschool programs.

A 1979 General Accounting Office report indicates that children participating in an early development program subsequently require less remedial special education. Participants are held back in grade less often, and demonstrate superior social, emotional and language development after entering school than comparable non-participating children.

Learning Disorders

As many as 20 percent of school age children have reading or learning disabilities which can have lifelong consequences if not overcome. They are a major cause of school dropout and can also lead to serious emotional and behavioral disturbances, some of which may be manifested as symptoms of physical illness.

Although there is little agreement on precise etiology, the consensus is that learning disabilities have multiple causes including central nervous system disorders, emotional factors, and environmental and cultural influences.

Can such disabled children be helped? Research indicates that fully 80 percent whose problems are identified early and who receive remedial education can function within normal range for their age.

Vision problems, if uncorrected, can impair learning ability--and an estimated 20 percent of all children have them. Two-thirds are nearsighted; one third, farsighted.

As much as an additional three percent have hearing difficulties, often caused by complications from middle ear infections. Impaired hearing from recurrent middle ear infections during the critical

years of language development can interfere with learning ability. Early diagnosis and treatment of the infections--among the most common ailments of early childhood--could prevent many cases of temporary and some of permanent hearing damage as well as contribute to prevention of learning and behavioral problems later in childhood.

Mental Retardation

An estimated six million Americans suffer from mild to severe retardation, and each year about 100,000 children are identified as mentally retarded.

In only a small percentage of cases is retardation detectable at birth. Usually, diagnosis is made at school age. In about 90 percent of cases, the retardation is defined as mild (IQs 50 to 70).

Much mild retardation is now believed to be the result of a deprived sociocultural environment often associated with poverty. The likely mechanism: inadequate stimulation or improper nutrition. Since poor nutrition has been associated with slow mental development, it is important to ensure good nutritional habits for children.

Child Abuse and Neglect

Abuse and neglect are serious--and, unfortunately, not rare--threats to both physical and emotional development. They account not only for many injuries, burns and other seeming accidents in children but also for brain damage, emotional scars, and even deaths. There are also children who are victims of sexual abuse, incest, and rape.

The inherently intimate aspect and difficulties in identifying and reporting instances of abuse and neglect have led to widely varying estimates of their extent.

Estimates of the actual number of cases of child abuse, which is generally acknowledged to be greatly

under-reported, range from 200,000 to four million a year. Child neglect is probably more common than direct physical abuse.

Abuse and neglect often appear to be manifestations of severe family instability. Stress can contribute to the instability and poverty may contribute to the stress. Alcohol is implicated in many cases. Physically or mentally handicapped children can be targets of abuse by parents frustrated by the handicaps. Parental immaturity can be critical but many otherwise stable, intelligent parents have been known to abuse their children in stressful situations.

High risk families range from the obviously deeply troubled and chronically disorganized--many already known in some way to the police or other community resources--to families temporarily under stress. Also at high risk are children of teenage mothers and those in families with closely spaced children.

Abusing parents are often immature, dependent, unable to handle responsibility. They have low self-esteem, strong beliefs about the value of physical punishment, and misconceptions about children's competence to understand and perform according to their expectations. They frequently make unreasonable demands and, during time of crisis, may direct their anger and frustration at a child. They often are isolated socially and have difficulty seeking help.

Efforts to reduce and ultimately eliminate child abuse will have to be multifaceted. Some promising approaches involve parent education, enhancement of community and social support systems, assistance to abusing parents through collaborative efforts of public and private sector, and projects designed to create an integrated health and social service delivery system. Such programs help ensure that families at risk for child abuse have continuing contact and follow-up care from a health or social services agency from the prenatal period through the school years.

Nutrition

The nutritional habits developed in childhood can profoundly affect health throughout life.

No longer are overt nutritional deficiencies as common as they once were, particularly among the poor and uneducated, although iron deficiency still exists among disadvantaged children and may show up during screening examinations. To some extent, the needs of children who would otherwise be undernourished have been met by school programs which provide nutritious breakfasts and lunches, and by food stamps or income supplements. Improvements in these programs, however, are required to more adequately meet needs.

Today's most prevalent nutritional problems are overeating and illadvised food choices. Obesity--a risk factor for hypertension, heart disease and diabetes--frequently begins during childhood. About one-third of today's obese adults were overweight as children. An obese child is at least three times more likely than another to be an obese adult. Because obesity is more difficult to correct in adulthood, major preventive efforts are best directed toward children and adolescents.

Another cause of concern is the diet of a large proportion of today's children--containing considerably more fat and sugar than a reasonable diet should have. Underscoring the seriousness of that concern: evidence of oronary arteriosclerosis in seemingly healthy young people in their late teens. Limiting fat consumption by children may reduce blood fat levels, and, thus, a risk factor for heart disease.

Subgoal: Reducing Childhood Accidents and Injuries

Almost 10,000 American children aged one to 14 were killed in accidents in 1977, more than three times as many as died from the next leading cause of death, cancer.

Motor vehicle accidents are responsible for more than 20 percent of childhood deaths, drowning for eight percent, and fires for six percent.

Although these problems fall under the rubric of health, they are the results primarily of environmental and social factors--and thus not amenable to usual medical intervention.

Prevention requires changes in the behavioral patterns of many parents as well as children. Frequently, accidents result from the poor judgment of parents who, for example, speed or drive after drinking--and from failure to teach proper precautionary measures to children.

But attention to other factors, such as motor vehicle and highway design, can reduce motor vehicle accident risk--and safety measures can cut the toll of accidental deaths from drownings and fires.

Most accidents among older children are accounted for by recreational activities and equipment. Among leading causes of the 498,000 recorded emergency room visits made by children aged six to 11 in 1976, were bicycle, swing, and skateboard accidents. For those 12 to 17, the leading causes included football, basketball, and bicycle riding. Contact sport injuries, it should be noted, often involve the mouth and teeth--and the aftereffects and treatment may be long and costly.

Toxic substances in the home--drugs, cleaning agents, pesticides, and other items--pose a special hazard to younger children. Although childhood poisoning deaths have been reduced in the past decade through changes in the formulation and packaging of poisonous agents, poisoning still accounts for five percent of non-motor vehicle accidental deaths among children under five.

Lead poisoning is a particularly striking example of an environmental hazard with severe consequences for children. Each year, ingestion or inhalation of lead leads to central nervous system

damage or mental retardation in 6,000 children as well as death for another 300 to 400.

Although it is a potential hazard for all children, lead poisoning is especially threatening for inner city children who may be more vulnerable because of lead ingested in paint chips from peeling, dilapidated walls as well as lead inhaled from automobile exhausts. Elevated lead levels have been detected in the blood and teeth of as many as 25 percent of children aged one to six living in neighborhoods with deteriorating housing. Research has been revealing an association between high blood or body lead levels and learning disabilities.

Other Important Problems

Still prominent threats to the good health of children include two other areas susceptible to preventive interventions: vaccine-preventable diseases and dental health.

Vaccine-Preventable Diseases

We have come tantalizingly close but have yet to reach a feasible goal: to protect all American children from the many serious diseases and the permanent physical and mental handicaps they may cause for which effective immunization is available.

That the goal of virtually eliminating such diseases is feasible and that intensive systematic immunization can achieve it is perhaps most dramatically demonstrated by the worldwide elimination of smallpox. Another prominent example: the decline in paralytic polio, since vaccine introduction in 1955, from as many as 20,000 cases a year in the 1940s and early 1950s to seven cases in 1978.

Today, measles is considered the most threatening of the childhood contagious diseases which remain both prevalent and preventable. Its frequent complications include pneumonia, ear infections and deafness. Brain inflammation (encephalitis) occurs in about one of every 1,000 cases, often producing

permanent brain damage and mental retardation. About one of every 10,000 children afflicted with measles dies as a result of complications.

In 1962, there were nearly five million cases of measles (of which about 500,000 were officially reported). After the introduction of the measles vaccine in 1963, reported measles incidence was reduced by more than 90 percent.

In recent years the number of cases reported has ranged from 22,000 in 1974 to 57,000 in 1977. But, as a result of the recent National Immunization Initiative, the incidence of measles has experienced a remarkable decline to the lowest levels ever recorded.

Rubella (German measles) remains a problem of importance, with 20,000 reported cases in 1977 (actual cases are estimated to be as much as 20 times the reported number). The most dangerous consequence of rubella is damage to the fetus when a woman becomes infected early in pregnancy (see Chapter 3). A vaccine is available and immunization of children--and of young women before pregnancy--is vital.

Mumps, although usually not a serious disease in childhood, nevertheless can sometimes involve the central nervous system, with nerve deafness as one of the most severe complications. Approximately one case of deafness occurs for every 15,000 cases of mumps in the United States. In adults, mumps can affect the reproductive organs and in males this occasionally results in sterility. A combined vaccine--for mumps, measles and rubella--makes immunization against mumps practical. Still, more than 16,000 cases occurred in 1978.

For diphtheria, pertussis (whooping cough) and tetanus (lockjaw), vaccines are readily available. Yet, while incidence has dropped to low levels, many children remain unprotected and vulnerable to the respiratory, cardiovascular, and nervous system complications which may occur with these diseases.

Pertussis was once a leading cause of death for children at the turn of the century. Today it is fatal to one of every 100 afflicted children, but only 2,000 cases were reported in 1977. Diphtheria and tetanus occur less frequently (under 100 reported cases of each in 1977). Still, all three diseases remain threats for children not adequately immunized.

Prior to the national childhood immunization effort which began in 1977, one-quarter to one-half of pre-school and school-age children remained incompletely immunized. Ironically, the great success of previous immunization programs created a complacency and was one reason why many children were not being immunized. The gains of the past two years demonstrated that national and local campaigns are needed on a sustained basis to increase parental awareness of the need for immunization and maintain immunization at an acceptable level.

Contagious diseases for which immunizations are available are not the only childhood infectious diseases of concern. Rheumatic fever--caused by streptococcal infection--ranked 40 years ago as the leading cause of death for children aged five to 15. Today, with early diagnosis and adequate treatment for streptococcal infections, complications such as rheumatic fever can be prevented.

Dental Health

Tooth decay affects most children soon after age three when the primary teeth have appeared. By age 11, the average American child has three permanent teeth damaged by decay. By age 17, eight or nine permanent teeth have decayed, been filled, or are missing.

Tooth decay is irreversible. Once begun, decay that is left untreated usually destroys the tooth. Although treatment generally consists of removing the decay and filling the tooth, the problem is compounded by frequent recurrence within relatively brief periods of time. Follow-up and continuing detection and treatment are needed.

Even though decay primarily occurs in childhood, it may lead to misalignment or loss later of permanent teeth. It can also affect appearance and lead to nutrition and speech problems, and difficulties in normal emotional development.

Decay has three requisites: a susceptible tooth, a population of certain bacteria in the mouth, and certain foods, particularly sugars, to encourage the bacteria. Prevention efforts, therefore, must be aimed at making teeth less susceptible, minimizing bacterial growth, and altering the diet.

The biggest problems are sweets, particularly sticky sweets and hard candies. Sugary materials that are eaten frequently, or that remain in the mouth for extended periods, encourage bacteria in the mouth to form acids that destroy tooth enamel, and subsequently, underlying tooth structures. The practice of giving an infant or small child a bedtime bottle filled with milk or sweet liquid also is conducive to decay.

That reduction of sugar intake can avoid much decay was demonstrated by the significant decline in European countries during the two World Wars when sugar was in short supply.

Many children also experience disease of the supporting tissues (periodontal disease). Usually beginning in childhood, periodontal disease progresses slowly and, unless checked, can cause serious problems later in life, including complete loss of teeth.

Fluoridation has demonstrated over the past 30 years that it is one of the most effective measures in preventing tooth decay and is addressed in Chapter 9.

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Many factors affect a child's development--genetics, the home environment, the quality of

interactions with parents, teachers, health professionals, other adults, peers. With so many influences, no single course of action will protect the future mental, emotional, and physical health of every child and assure realization of full developmental potential. Section III will detail needed actions.

But the special importance of the school should be emphasized here.

Many hours of a child's life are spent in the classroom. Providing health services through school programs can be of great value. So could effective health education.

Our children could benefit greatly from a basic understanding of the human body and its functioning, needs, and potential--and from an understanding of what really is involved in health and disease.

There are a number of school systems which have developed good models for health education.

For other schools to really take on what could be their highly significant role in health education and health promotion will require a commitment by school leadership at local, State and national levels to apply these models.